SERVICE MANUAL

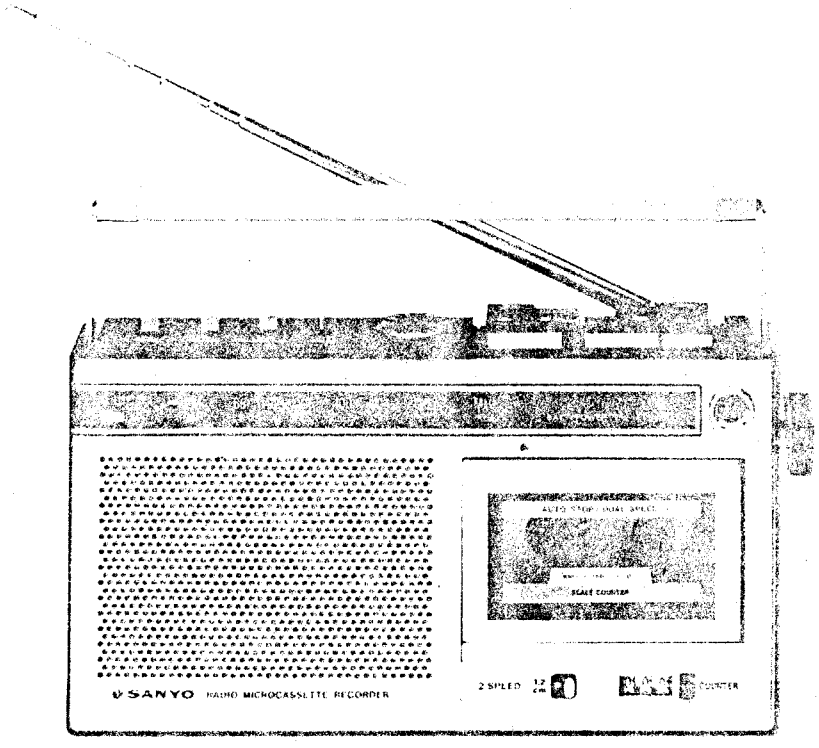
SANYO

AM/FM RADIO MICROCASSETTE RECORDER

SZALA MARIAN

M5850FE

EUROPE



142 310 07

SPECIFICATIONS

Power Source	
DC . . . . . 4.5V(UM-3, HP 7, AA Cell, Mignonzellen, R6) x 3	
Output Power	280 mW (maximum)
Current Consumption (at VR min.)	
Record mode	110mA
Playback mode	100mA
Fast Forward mode	100mA
Rewind mode	115mA
Recording System	AC Bias
Erasing System	Magnet Erasing
Tape Speed	
1.2cm	15/32ips. ±10%
2.4cm	15/16ips. ±3%
Wow & Flutter	0.45%
Fast Forward Time	230sec.(MC-60) UN-WTD (2.4cm/s)
Rewind Time	120sec. (MC-60) UN-WTD (2.4cm/s)
Frequency Response	200 – 4,000Hz
Erase Ratio (Overall)	50dB
Signal to Noise Ratio	40dB
Crosstalk (Track to Track)	55dB
Terminal Impedance	
MIC	3k-ohm
Monitor	3 – 4ohm
Frequency Range	
AM	525 – 1,605kHz
FM	87.5 – 108MHz

–Specifications subject to change without notice.–

WM-5358

NOTE: The above mentioned specifications are mainly based on the IHF measurements standard. They can therefore not directly be compared with specifications based on the DIN standard or other standards.

MECHANICAL ADJUSTMENTS

GENERAL REMARKS

1. Before adjusting the mechanism of the unit, wipe the tape contacting surfaces clean as well as the rubber surfaces of the driving parts with a soft cloth soaked in alcohol. Trouble may occur because of oil and grease stains.

2. Use the external power source (Constant-Voltage Regulator, 4.5V DC) whenever a repair or an adjustment work is performed.

3. Keep the belts clean while the adjustments are performed.

REQUIRED EQUIPMENTS

- Microcassette Torque Meter
- Dial Tension Gauge
- Plus Screwdriver (1.7mm)

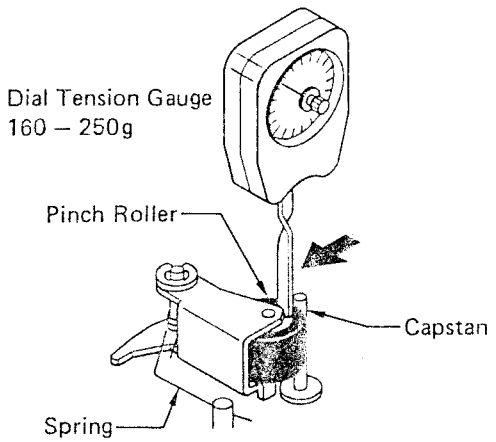
NOTE

Set the Tape Speed Select Switch to "2.4cm" and perform a repair or an adjustment work.

PINCH ROLLER ADJUSTMENT

Check the Pinch Roller. If the rubber surface has scratch marks or is deteriorated, replace it with a new one.

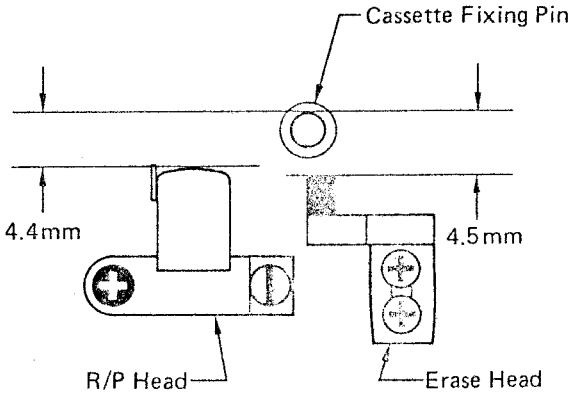
Set the unit in the playback mode and measure the pressure with the dial tension gauge. It should be 180 – 150g-cm.



HEAD POSITION ADJUSTMENT

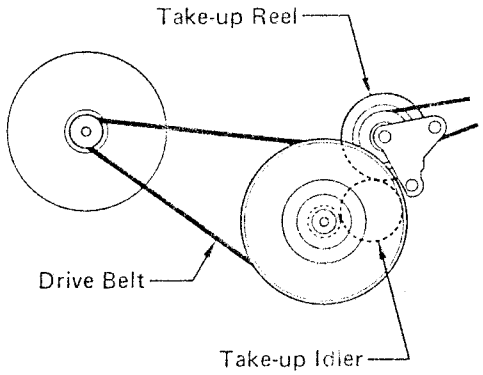
The distance between the cassette fixing pins and each Head should be as follows with the unit in the recording mode.

R/P Head 4.4mm
Erase Head 4.5mm



TAKE-UP TORQUE ADJUSTMENT

Set the unit in the playback mode and measure the take-up torque of the Take-up Reel. It should be 6 – 11g-cm.



If the following parts are stained or the rubber is deteriorated, wipe them with a soft cloth soaked in alcohol or replace them with new ones.

* Drive Belt
* Take-up Idler
* Take-up Reel

ELECTRICAL ADJUSTMENTS

REQUIRED EQUIPMENTS

- VTVM
- Frequency Counter
- DC Constant-Voltage Regulator
- Dummy Load (4 ohm)
- Test Tape
  * 3kHz test tape (Example: Olympus A09)
- Alignment Tool

NOTE

1. Supply 4.5V DC from the constant-voltage regulator at the adjustments.
2. Unless otherwise specified, set the Tape Speed Select Switch to "2.4cm".

TAPE SPEED ADJUSTMENT

Connect the frequency counter to the earphone jack.

Step	Test Tape	Speed Switch	Adjustment	Remarks
1	Olympus A09	2.4cm/sec.	P101	3,000Hz (±3%)
2		1.2cm/sec.	P102	1,500Hz (±10%)

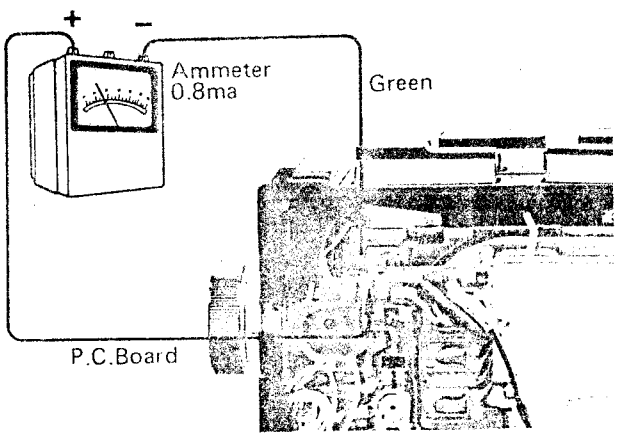
HEAD AZIMUTH ADJUSTMENT

Connect the VTVM to the earphone jack.

Test Tape	Adjustment	Remarks
Olympus A09	Azimuth Adjusting Screw	Maximum

BATTERY CHECK LEVEL ADJUSTMENT

Unsolder the green lead of the REC/BATT Indicator and connect an ammeter to the green lead and the Amplifier P.C.Board as illustrated. Then, supply 3.15V to the unit.



Adjustment	Remarks
P103	0.8mA

TUNER ADJUSTMENT

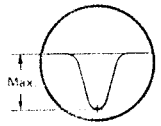
REQUIRED EQUIPMENTS

- AM Standard Signal Generator
- FM Standard Signal Generator
- Generator Scope
- Loop Antenna
- Dummy Antenna (75ohm, Unbalanced Type)
- VTVM
- Frequency Counter
- Oscilloscope
- Dummy Load (4 ohm)
- Alignment Tool

Set the Function Switch to "RADIO" and perform the adjustment, following the chart below.

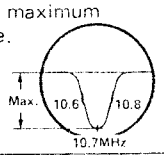
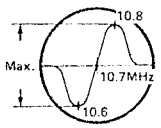
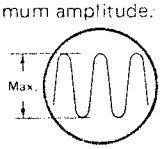
AM ALIGNMENT

Standard test frequency 400 kHz and modulation 30% at AM

Step	Alignment	Connections		Frequency of Signal Generator	Tuning Dial Setting	Adjustment	Remarks
		INPUT	OUTPUT				
1	Calibration of IF for AM	Connect standard loop antenna to output terminal of gene-scope. Place bar antenna 60 cm away from loop antenna.	Connect VTVM and Oscilloscope to Monitor Jack. Adjust output with Volume Control. (Connect 4 ohm dummy load to VTVM.)	460 kHz	Low End	T7 and T8	Obtain symmetrical curve and maximum amplitude. 
2	Adjustment of IF Gain						
3	Calibration of Tuning Range			510 kHz		T6	Obtain sine-wave of 400 Hz and maximum amplitude.
4				1670 kHz	High End	PVC-TC4	
5	Adjustment of Tracking			600 kHz	600 kHz	L3 (MW bar ant. coil)	
6				1400 kHz	1400 kHz	PVC-TC3	
7	Repeat the above adjustments.						

FM ALIGNMENT

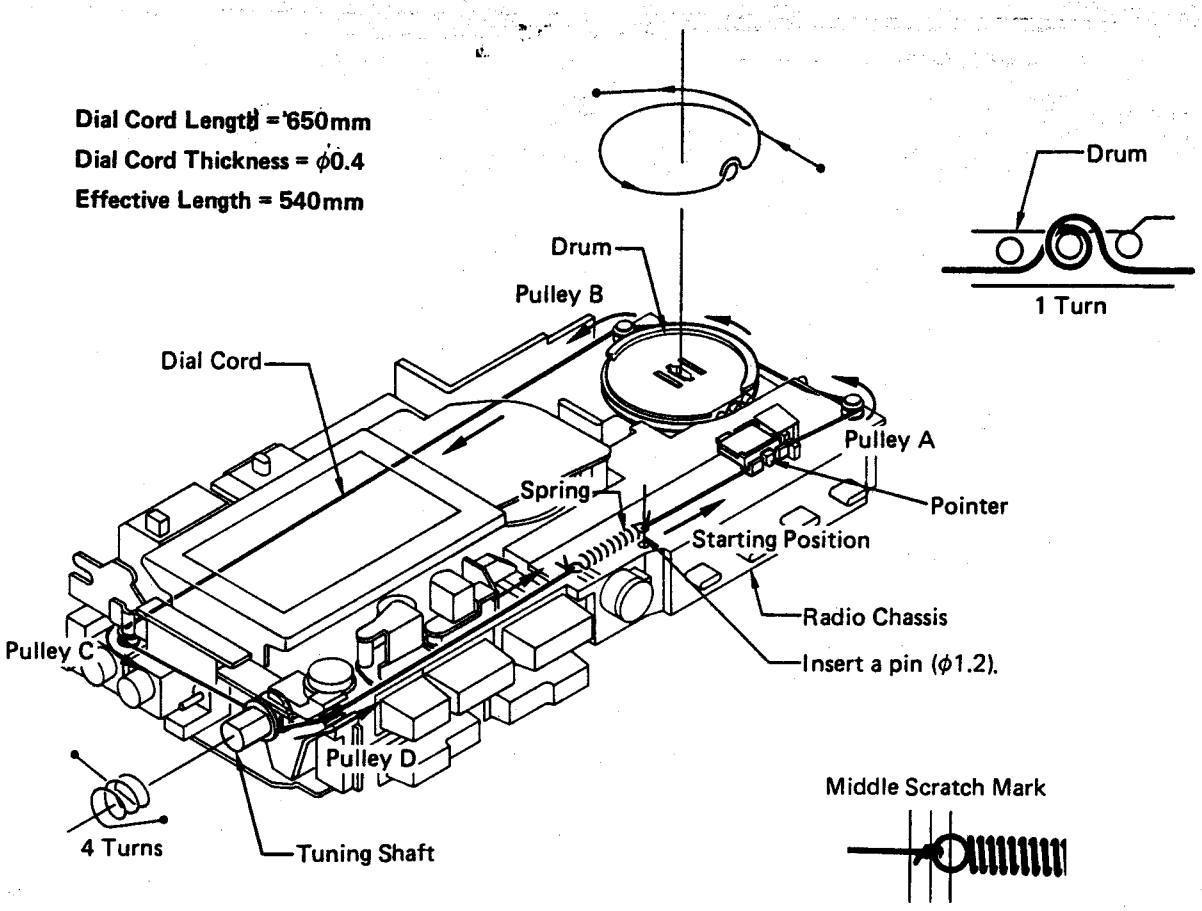
Standard Test Frequency 400 Hz and Deviation 22.5 kHz

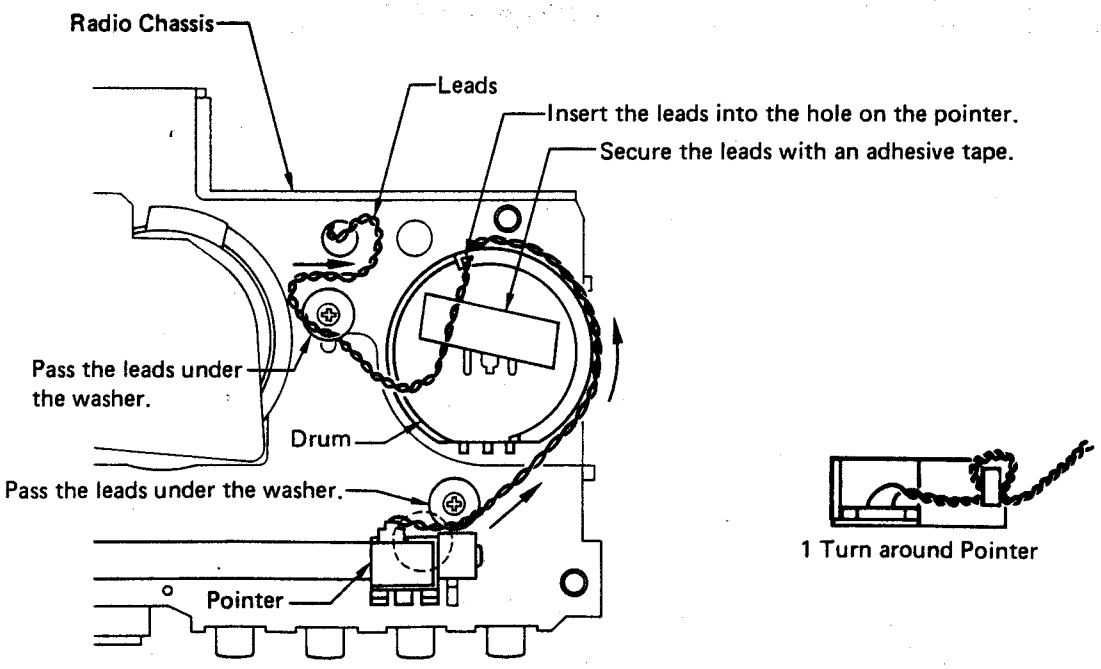
Step	Alignment	Connections		Frequency of Signal Generator	Tuning Dial Setting	Adjustment	Remarks
		INPUT	OUTPUT				
1	Calibration of IF	Loop output terminal of gene-scope and place it close to T2.	Connect input terminal of gene-scope to tuner signal output (R14).	10.7 MHz	Low End	Turn T5 (blue core) fully counter-clockwise. T3 and T4	Obtain symmetrical curve and maximum amplitude. 
2						T5 (blue core)	Obtain S curve and maximum amplitude. 
3	Calibration of Tuning Range	Connect output terminal of FM signal generator through dummy antenna (75 ohm, unbalanced) to FM antenna terminal.	Connect VTVM and oscilloscope to Monitor Jack. Adjust output with Volume Control. (Connect 4 ohm dummy load to VTVM.)	87.3 MHz		L2	Obtain sine-wave of 400 Hz and maximum amplitude. 
4				109 MHz	High End	PVC-TC2	
5	Adjustment of Tracking			90 MHz	90 MHz	L1	
6				106 MHz	106 MHz	PVC-TC1	
7	Repeat the above adjustments.						

* Use a screwdriver with plastic grip for all adjustments.

DIAL CORD STRINGING

Dial Cord Length = 650mm
Dial Cord Thickness = ϕ0.4
Effective Length = 540mm




Radio Chassis
Leads
Insert the leads into the hole on the pointer.
Secure the leads with an adhesive tape.
Pass the leads under the washer.
Drum
Pass the leads under the washer.
Pointer
1 Turn around Pointer

PARTS LIST

Ref. No.	Part No.	Description	Q'ty
	PACKAGE		
	141 6 1419 47404	Individual Carton	1
	141 6 1449 65800	Styrofoam Case	1
	141 6 2519 11790	Cover	1
	141 6 2519 18015	Poly Cover	1
	141 6 3919 37900	Plain Pad	1
	141 6 4559 02100	Serial No. Sheet	3
	ACCESSORIES		
	4 1529 70141	Earphone	1
	4 1919 71300	AC Adaptor	1
	4 2419 72304	Micro Cassette	1
	141 0 2719 00800	Hand Strap Assy	1
	141 2 1819 10701	Carrying Case	1
	142 6 4119 05200	Instruction Manual	1
	CABINET		
SP1	4 1519 70910	Speaker (4 ohm)	1
D103	4 2029 71550	LED R/P Assy (Record/Battery)	1
	4 2449 70290	Antenna	1
S5	4 6129 70460	Light P.C.B. Assy (Dial Lamp Switch) (Included in PL1)	1
	141 0 1119 66002	Cabinet Top Assy	1
	141 0 1119 71005	Cabinet Bottom Assy	1
	141 0 1339 09200	Battery Lid Assy	1
	141 0 1719 08701	Handle Assy	1
	141 2 1319 17400	Cassette Window	1
	141 2 1339 22100	Socket Plate	1
	141 2 1519 25501	Lid Panel	1
	141 2 1519 26300	Lid Plate	1
	141 2 1619 67300	Light Button	1
	141 2 1649 13200	Slide Knob	1
	141 2 2419 23400	Knob Sheet	1
	141 2 2719 14900	Handle Stopper, Left	1
	141 2 2719 15000	Handle Stopper, Right	1
	141 2 4219 17200	Screw	4
	141 2 4219 21800	Screw	1
	141 2 4469 25200	Cushion	2
	141 2 7519 52400	Pin	2
	141 2 8539 34501	Spring, Cassette	1
	141 2 8539 37500	Spring	1
	101 3 1302 00616	Screw, Pan Hd. +M2.0x6	2
	101 3 1302 02016	Screw, Pan Hd. +M2.0x20	2
	103 3 1302 00819	Screw, Pan Hd. Tapping-2 +M2.0x8	3
	103 3 1302 01219	Screw, Pan Hd. Tapping-2 +M2.0x12	1
	110 3 9260 50054	Washer M2.6x5.0x0.5	1
	141 0 1639 07900	Volume Knob Assy	1
	141 0 1639 08000	Tuning Knob Assy	1
	141 2 1649 13300	Switch Knob	1
	141 2 4539 21700	Washer	1
	141 2 3229 28600	Shield Plate	1
	141 2 3229 28800	Beat Shield	1
	141 2 3229 28900	Ear. Shield	1
	141 2 4219 17500	Screw	1
	141 2 4359 27000	Sheet	1
	AMPLIFIER P.C.B. ASSY		
	4 1329 75532	Amplifier P.C.B. Assy	1
	141 2 3229 27900	Shield Plate	1
	141 2 4469 10300	Antenna Cushion	1
	141 2 4469 34800	Diode Cushion	1
L3	4 2579 70880	Bar Antenna	1
BF1	4 2539 70820	Bead Ferrite	1
C18	CT4 7 530A M00SV	Tantalum 4.7 µF 3V ±20%	1
C27	CT1 0 663A M00DV	Tantalum 10 µF 6.3V ±20%	1
C32	CT4 7 663A M00DV	Tantalum 47 µF 6.3V ±20%	1
C33	CT3 3 630A M00NV	Tantalum 33 µF 3V ±20%	1
C37	CT1 0 630A M00NV	Tantalum 10 µF 3V ±20%	1
C40	CD1 0 6160 0002V	Electrolytic 10 µF 16V	1
C41	CT1 0 5100 M00SV	Tantalum 1 µF 10V ±20%	1
C45	CD4 7 663A 0002V	Electrolytic 47 µF 6.3V	1

Ref. No.	Part No.	Description	Q'ty
	AMPLIFIER P.C.B. ASSY		
C104	CT1 0 5100 M00SV	Tantalum 1 µF 10V ±20%	1
C105	CT4 7 530A M00SV	Tantalum 4.7 µF 3V ±20%	1
C106	CT1 0 5100 M00SV	Tantalum 1 µF 10V ±20%	1
C108	CT6 8 4160 M00SV	Tantalum 0.68 µF 16V ±20%	1
C109	CD4 7 663A 0002V	Electrolytic 47 µF 6.3V	1
C110	CT2 2 530A M00SV	Tantalum 2.2 µF 3V ±20%	1
C111	CT4 7 4250 M00SV	Tantalum 0.47 µF 25V ±20%	1
C113	CT1 0 5100 M00SV	Tantalum 1 µF 10V ±20%	1
C115	CT1 0 5100 M00SV	Tantalum 1 µF 10V ±20%	1
C116	CT1 0 5100 M00SV	Tantalum 1 µF 10V ±20%	1
C118	CT2 2 630A M00NV	Tantalum 22 µF 3V ±20%	1
C119	CD2 2 663A 0002V	Electrolytic 22 µF 6.3V	1
C120	CD4 7 663A 0002V	Electrolytic 47 µF 6.3V	1
C123	CT2 2 530A M00SV	Tantalum 2.2 µF 3V ±20%	1
C124	CD1 0 763A 0002V	Electrolytic 100 µF 6.3V	1
C125	CD2 2 663A 0002V	Electrolytic 22 µF 6.3V	1
C126	CD4 7 663A 0002V	Electrolytic 47 µF 6.3V	1
C127	4 2239 70510	Capacitor 470 µF 6.3V	1
C129	CD1 0 763A 0002V	Electrolytic 100 µF 6.3V	1
C132	CD1 0 6160 0002V	Electrolytic 10 µF 16V	1
C134	CP3 3 2101 K000V	Polypropylene 0.0033 µF 100V ±10%	1
C137	CD2 2 663A 0002V	Electrolytic 22 µF 6.3V	1
C138	CI2 7 3250 KF00C	Boundary 0.027 µF 25V ±10%	1
CF1	4 2539 70760	Ceramic Filter	1
CF2	4 2539 70721	Ceramic Filter	1
D1	205 5 9040 44210	Diode, DS442	1
D2	202 5 9110 18820	Diode, 1S188	1
D3	202 5 9110 18820	Diode, 1S188	1
D4	4 2029 70790	Diode, ITT410	1
D5	202 5 9110 18820	Diode, 1S188	1
D6	205 5 9040 44210	Diode, DS442	1
D7	202 5 9110 18820	Diode, 1S188	1
D101	4 2029 71360	Diode, MA151WA	1
IC1	4 2069 70232	IC, µPC1018	1
IC101	4 2069 70990	IC, BA526	1
IC102	4 2069 71000	IC, M51141P	1
J1	4 2359 73470	Jack 1P (Monitor)	1
J2	4 2359 73470	Jack 1P (Microphone)	1
J3	4 2359 74320	Ext. Power Jack	1
L1	4 2599 70600	RF Coil	1
L2	4 2589 71610	OSC Coil	1
P103	4 2229 73150	Potentiometer (B-1k)	1
	4 2269 32990	Beat Switch P.C.B.	1
PVC1	4 2249 70610	Variable Condenser	1
Q1	4 2039 70710	Transistor, 2SC2786	1
Q2	4 2039 70710	Transistor, 2SC2786	1
Q3	4 2039 70710	Transistor, 2SC2786	1
Q4	4 2039 70700	Transistor, 2SC2785	1
Q101	4 2039 70731	Transistor, 2SB709	1
Q102	4 2039 70720	Transistor, 2SD601	1
Q103	4 2039 70730	Transistor, 2SB709	1
Q104	4 2039 70720	Transistor, 2SD601	1
R139	RP1 0 3121 JH000	Pretty 10k ohm 1/8W ±5%	1
R140	RP1 0 2121 JH000	Pretty 1k ohm 1/8W ±5%	1
S3	4 2319 74150	Slide Switch (Beat Cancel)	1
T1	4 2579 70891	Antenna Coil FM	1
T2	4 2569 71150	IFT FM	1
T3	4 2569 71160	IFT FM	1
T4	4 2569 71170	IFT FM	1
T5	4 2569 71180	IFT FM	1
T6	4 2589 71620	OSC Transformer MW	1
T7	4 2569 71191	IFT AM	1
T8	4 2569 71201	IFT AM	1
T101	4 2589 71640	OSC Transformer	1
	4 2269 32961	Chip P.C.B. Assy	1
	CHIP P.C.B. ASSY		
	4 2269 32961	Chip P.C.B. Assy	1
C1	CG8 2 0500 JD00A	CG 82 pF 50V ±5%	1

PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty
	CHIP P.C.B. ASSY		
C2	CG2 0 0500 JD00A	CG 25 pF 50V ±5%	1
C3	CG2 2 3250 MH00A	CG 0.022 μF 25V ±20%	1
C4	CG2 2 3250 MH00A	CG 0.022 μF 25V ±20%	1
C5	CG2 2 3250 MH00A	CG 0.022 μF 25V ±20%	1
C6	CG3 6 0500 JD00A	CG 36 pF 50V ±5%	1
C7	CG5 0 A500 CD00A	CG 5 pF 50V ±0.2PF	1
C8	CG3 0 A500 CCH0A	CG 3 pF 50V ±0.2PF	1
C9	CG2 2 3250 MH00A	CG 0.022 μF 25V ±20%	1
C10	CG2 2 3250 MH00A	CG 0.022 μF 25V ±20%	1
C11	CG1 0 2500 KH00A	CG 0.001 μF 50V ±10%	1
C12	CG3 3 3250 MH00A	CG 0.033 μF 25V ±20%	1
C13	CG3 3 3250 MH00A	CG 0.033 μF 25V ±20%	1
C14	CG1 0 2500 KH00A	CG 0.001 μF 50V ±10%	1
C15	CG3 3 3250 MH00A	CG 0.033 μF 25V ±20%	1
C16	CG1 0 2500 KH00A	CG 0.001 μF 50V ±10%	1
C17	CG1 0 2500 KH00A	CG 0.001 μF 50V ±10%	1
C19	CG1 5 3500 KH00A	CG 0.015 μF 50V ±10%	1
C20	CG4 7 3500 ZI00A	CG 0.047 μF 50V +80, −20%	1
C21	CG3 3 0500 JCH0A	CG 33 pF 50V ±5%	1
C22	CG2 2 0500 JCH0A	CG 22 pF 50V ±5%	1
C23	CG1 5 0500 JCH0A	CG 15 pF 50V ±5%	1
C24	CG2 2 3250 MH00A	CG 0.022 μF 25V ±20%	1
C25	CG1 2 0500 JCH0A	CG 12 pF 50V ±5%	1
C26	CG2 2 3250 MH00A	CG 0.022 μF 25V ±20%	1
C28	CG3 3 3250 MH00A	CG 0.033 μF 25V ±20%	1
C29	CG3 3 3250 MH00A	CG 0.033 μF 25V ±20%	1
C30	CG2 2 3250 MH00A	CG 0.022 μF 25V ±20%	1
C31	CG3 3 3250 MH00A	CG 0.033 μF 25V ±20%	1
C34	CG3 3 3250 MH00A	CG 0.033 μF 25V ±20%	1
C35	CG3 3 3250 MH00A	CG 0.033 μF 25V ±20%	1
C36	CG2 2 3250 MH00A	CG 0.022 μF 25V ±20%	1
C38	CG4 7 3500 ZI00A	CG 0.047 μF 50V +80, −20%	1
C39	CG4 7 3500 ZI00A	CG 0.047 μF 50V +80, −20%	1
C42	CG3 3 3250 MH00A	CG 0.033 μF 25V ±20%	1
C43	CG5 0 A500 CD00A	CG 5 pF 50V ±0.2PF	1
C44	CG2 2 3250 MH00A	CG 0.022 μF 25V ±20%	1
C46	CG1 0 0500 JCH0A	CG 10 pF 50V ±5%	1
C47	CG3 0 0500 JCH0A	CG 30 pF 50V ±5%	1
C101	CG3 3 3250 MH00A	CG 0.033 μF 25V ±20%	1
C103	CG2 2 3250 MH00A	CG 0.022 μF 25V ±20%	1
C107	CG3 3 2500 KH00A	CG 0.0033 μF 50V ±10%	1
C112	CG5 6 1500 KH00A	CG 560 pF 50V ±10%	1
C114	CG3 3 3250 MH00A	CG 0.033 μF 25V ±20%	1
C117	CG5 6 1500 KH00A	CG 560 pF 50V ±10%	1
C128	CG2 7 1500 KH00A	CG 270 pF 50V ±10%	1
C130	CG1 0 3500 MH00A	CG 0.01 μF 50V ±20%	1
C131	CG1 0 3500 MH00A	CG 0.01 μF 50V ±20%	1
C133	CG3 3 2500 KH00A	CG 0.0033 μF 50V ±10%	1
C135	CG1 5 1500 KD00A	CG 150 pF 50V ±10%	1
C139	CG1 0 2500 KH00A	CG 0.001 μF 50V ±10%	1
R1	RG5 6 4121 JA000	RG 560k ohm 1/8W ±5%	1
R2	RG1 0 2121 JA000	RG 1k ohm 1/8W ±5%	1
R3	RG1 0 1121 JA000	RG 100 ohm 1/8W ±5%	1
R4	RG8 2 4121 JA000	RG 820k ohm 1/8W ±5%	1
R5	RG1 0 2121 JA000	RG 1k ohm 1/8W ±5%	1
R6	RG1 0 1121 JA000	RG 100 ohm 1/8W ±5%	1
R8	RG1 0 1121 JA000	RG 100 ohm 1/8W ±5%	1
R9	RG1 0 1121 JA000	RG 100 ohm 1/8W ±5%	1
R10	RG2 7 2121 JA000	RG 2.7k ohm 1/8W ±5%	1
R11	RG3 3 4121 JA000	RG 330k ohm 1/8W ±5%	1
R12	RG2 7 2121 JA000	RG 2.7k ohm 1/8W ±5%	1
R13	RG1 0 2121 JA000	RG 1k ohm 1/8W ±5%	1
R14	RG1 0 2121 JA000	RG 1k ohm 1/8W ±5%	1
R15	RG1 0 2121 JA000	RG 1k ohm 1/8W ±5%	1
R16	RG1 0 2121 JA000	RG 1k ohm 1/8W ±5%	1
R17	RG4 7 2121 JA000	RG 4.7k ohm 1/8W ±5%	1
R18	RG4 7 2121 JA000	RG 4.7k ohm 1/8W ±5%	1
R19	RG3 3 4121 JA000	RG 330k ohm 1/8W ±5%	1
R20	RG5 6 4121 JA000	RG 560k ohm 1/8W ±5%	1
R21	RG1 0 1121 JA000	RG 100 ohm 1/8W ±5%	1

Ref. No.	Part No.	Description	Q'ty
	AMPLIFIER P.C.B. ASSY		
R22	RG1 0 2121 JA000	RG 1k ohm 1/8W ±5%	1
R23	RG3 3 4121 JA000	RG 330k ohm 1/8W ±5%	1
R24	RG1 0 4121 JA000	RG 100k ohm 1/8W ±5%	1
R25	RG2 2 2121 JA000	RG 2.2k ohm 1/8W ±5%	1
R26	RG1 0 1121 JA000	RG 100 ohm 1/8W ±5%	1
R27	RG1 0 3121 JA000	RG 10k ohm 1/8W ±5%	1
R28	RG1 0 3121 JA000	RG 10k ohm 1/8W ±5%	1
R29	RG1 8 4121 JA000	RG 180k ohm 1/8W ±5%	1
R30	RG2 2 2121 JA000	RG 2.2k ohm 1/8W ±5%	1
R31	RG1 0 3121 JA000	RG 10k ohm 1/8W ±5%	1
R32	RG1 2 3121 JA000	RG 12k ohm 1/8W ±5%	1
R101	RG2 2 2121 JA000	RG 2.2k ohm 1/8W ±5%	1
R102	RG8 2 2121 JA000	RG 8.2k ohm 1/8W ±5%	1
R104	RG2 2 2121 JA000	RG 2.2k ohm 1/8W ±5%	1
R105	RG1 8 2121 JA000	RG 1.8k ohm 1/8W ±5%	1
R106	RG1 8 2121 JA000	RG 1.8k ohm 1/8W ±5%	1
R107	RG1 0 6121 KA000	RG 10M ohm 1/8W ±10%	1
R108	RG1 5 2121 JA000	RG 1.5k ohm 1/8W ±5%	1
R109	RG2 2 1121 JA000	RG 220 ohm 1/8W ±5%	1
R110	RG3 9 3121 JA000	RG 39k ohm 1/8W ±5%	1
R111	RG2 7 3121 JA000	RG 27k ohm 1/8W ±5%	1
R112	RG2 2 3121 JA000	RG 22k ohm 1/8W ±5%	1
R113	RG2 2 3121 JA000	RG 22k ohm 1/8W ±5%	1
R116	RG4 7 0121 JA000	RG 47 ohm 1/8W ±5%	1
R118	RG3 9 0121 JA000	RG 39 ohm 1/8W ±5%	1
R120	RG0 0 0121 JA000	RG 0 ohm 1/8W ±5%	1
R121	RG5 6 1121 JA000	RG 560 ohm 1/8W ±5%	1
R122	RG2 7 1121 JA000	RG 270 ohm 1/8W ±5%	1
R123	RG1 5 3121 JA000	RG 15k ohm 1/8W ±5%	1
R124	RG3 3 2121 JA000	RG 3.3k ohm 1/8W ±5%	1
R125	RG1 0 0121 JA000	RG 10 ohm 1/8W ±5%	1
R126	RG4 7 3121 JA000	RG 47k ohm 1/8W ±5%	1
R129	RG1 2 1121 JA000	RG 120 ohm 1/8W ±5%	1
R138	RG1 0 2121 JA000	RG 1k ohm 1/8W ±5%	1
	BAND SWITCH P.C.B. ASSY		
	4 2319 74270	Band Switch P.C.B. Assy	1
	141 2 4179 01700	Push Nut	2
C102	CT4 7 530A M00SV	Tantalum 4.7 μF 3V ±20%	1
C121	CG2 2 3250 MH00A	CG 0.022 μF 25V ±20%	1
	4 2439 71160	Lead	1
Q105	4 2039 70720	Transistor, 2SD601	1
R103	RP8 2 2121 JH000	Pretty 8.2k ohm 1/8W ±5%	1
R114	RP1 0 2121 JH000	Pretty 1k ohm 1/8W ±5%	1
R115	RP3 3 3121 JH000	Pretty 33k ohm 1/8W ±5%	1
R117	RP4 7 2121 JH000	Pretty 4.7k ohm 1/8W ±5%	1
R132	RP4 7 3121 JH000	Pretty 47k ohm 1/8W ±5%	1
R137	RG2 2 5121 KA000	RG 2.2M ohm 1/8W ±10%	1
R140	RD4 7 0251 JH000	Carbon 47 ohm 1/4W ±5%	1
S2	4 2319 73770	Leaf Switch (Tone)	1
S7	4 2319 73770	Leaf Switch (Pause)	1
S8	4 2319 72680	Slide Switch (Band)	1
S10	4 2319 73642	Slide Switch (Function)	1
	SPEED SWITCH P.C.B. ASSY		
	4 2319 74280	Speed Switch P.C.B. Assy	1
C136	4 2239 70520	Capacitor 220 μF 6.3V	1
L101	4 2539 70740	Choke Coil (500 μH)	1
P101	4 2229 73164	Potentiometer (B-2k)	1
P102	4 2229 73161	Potentiometer (B-300)	1
Q106	203 5 4580 69850	Transistor, 2SB698	1
Q107	203 5 5210 53650	Transistor, 2SC536	1
Q108	203 5 5210 53650	Transistor, 2SC536	1
R127	RP3 3 1121 JV000	Pretty 330 ohm 1/8W ±5%	1
R128	RP8 2 1121 JV000	Pretty 820 ohm 1/8W ±5%	1
R130	RP2 2 3121 JV000	Pretty 22k ohm 1/8W ±5%	1
R131	RS5 6 1620 JT000	Micro 560 ohm 1/16W ±5%	1
R133	RP1 0 2121 JV000	Pretty 1k ohm 1/8W ±5%	1
R134	RS5 6 1620 JT000	Micro 560 ohm 1/16W ±5%	1
R135	RS1 2 4620 JT000	Micro 120k ohm 1/16W ±5%	1

PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty
	SPEED SWITCH P.C.B. ASSY		
R136	RS1 5 4620 JT000	Micro 150k ohm 1/16W ±5%	1
S9	4 2319 73393	Slide Switch (Tape Speed)	1
	MECHANISM		
S1	4 2319 73952	Power Switch Assy (Power Switch)	1
S4	4 2319 73932	F.F./Rewind Switch Assy (F.F./Rewind Switch)	1
HD1	4 2429 71532	R/P Head Assy	1
HD2	4 2429 71540	Erase Head	1
	4 5279 71021	Motor Assy	1
	141 0 1249 15300	Cassette Support Assy	1
	141 0 3119 19100	Chassis Assy	1
	141 0 3519 19200	Flywheel Support Assy	1
	141 0 5219 07400	Flywheel Assy	1
	141 0 5319 05600	Take-up Reel Assy	1
	141 0 5369 01300	Supply Arm Assy	1
	141 0 5369 01400	Reel Bracket Assy	1
	141 0 5419 02800	Pinch Roller Assy	1
	141 0 5559 06100	Rewind Gear Arm Assy	1
	141 0 6139 01900	F.F. Lever Bracket Assy	1
	141 0 7319 22100	Slide Base Assy	1
	141 0 7419 27700	Stop Lever Assy	1
	141 0 7419 27900	Record Lever Assy	1
	141 0 7419 28000	Rewind Lever Assy	1
	141 0 7419 28600	Play Lock Lever Assy	1
	141 0 7439 09400	Click Arm Assy	1
	141 0 8139 00600	Counter Bracket Assy	1
	141 2 1219 16200	Chassis Panel	1
	141 2 3529 25200	Supply Arm Collar	1
	141 2 3529 25300	Collar	1
	141 2 3529 25400	Collar	1
	141 2 3529 25500	Collar	1
	141 2 3529 28200	Lock Lever Collar	1
	141 2 3769 09300	Spacer, Erase Head	1
	141 2 4219 18800	Screw, Azimuth	1
	141 2 4219 22500	Screw, Post	1
	141 2 4539 18700	Washer	1
	141 2 4539 18800	Washer	6
	141 2 4539 19000	Washer, Lock	4
	141 2 4579 04200	**Ring Roller**	1
	141 2 4729 06300	Lug	1
	141 2 4729 06700	Lug	1
	141 2 5319 08700	Supply Reel	1
	141 2 5519 33200	Take-up Idler	1
	141 2 5649 16400	Counter Belt	1
	141 2 5649 16500	Drive Belt	1
	141 2 6619 02700	Rewind Pulley	1
	141 2 7319 44900	Erase Head Base	1
	141 2 7319 45000	F.F. Rewind Slider	1
	141 2 7419 71700	Eject Lever	1
	141 2 7419 71900	Actuating F.F. Rewind Lever	1
	141 2 8119 08600	Counter	1
	141 2 8419 10500	Actuating Record Lever	1
	141 2 8519 85800	Spring, Azimuth	1
	141 2 8519 86600	Spring, Supply Arm	1
	141 2 8519 86700	Spring, Interlock	1
	141 2 8519 87200	Spring, Eject	1
	141 2 8519 89500	Spring, Erase Head	1
	141 2 8519 98500	Spring, Record Lever	1
	141 2 8519 98600	Spring, Pinch Roller	1
	141 2 8519 98700	Spring, Actuating Record Lever	1
	141 2 8519 98800	Spring, Rewind Lever	1
	141 2 8519 98900	Spring, Slide Base	1
	141 2 8519 99000	Spring, F.F. Lever	1
	141 2 8519 99100	Spring, Rewind Lever	1
	141 2 8519 99200	Spring, Take-up Idler	1
	141 2 8519 99300	Spring, Stop Lever	1
	141 2 8519 99400	Spring, Gear Rewind Arm	1
	141 2 8519 99500	Spring, Click Arm	1
	141 2 8539 36000	Spring, Cassette Support	1

Ref. No.	Part No.	Description	Q'ty
	MECHANISM		
	141 2 8539 36600	Spring, Counter	1
	141 2 8539 39900	Spring, Plate	1
	112 3 1301 50082	E Ring M1.5	11
	127 3 1214 01613	PC Screw, Flat Hd.-1 +M1.4x1.6	3
	127 3 1317 02018	PC Screw, Pan Hd.-1 +M1.7x2.0	6
	127 3 1317 03018	PC Screw, Pan Hd.-1 +M1.7x3.0	1
	127 3 1317 03518	PC Screw, Pan Hd.-1 +M1.7x3.5	1
	127 3 1317 04018	PC Screw, Pan Hd.-1 +M1.7x4.0	1
	128 3 1314 05018	PC Screw, Pan Hd.-3 +M1.4x5.0	2
	128 3 1317 02018	PC Screw, Pan Hd.-3 +M1.7x2.0	5
	128 3 1317 02518	PC Screw, Pan Hd.-3 +M1.7x2.5	2
	128 3 1317 04018	PC Screw, Pan Hd.-3 +M1.7x4.0	2
	4 1539 70621	Microphone	1
D102	4 2029 71340	LED Pointer (Tuning)	1
	4 2269 32980	R/P Switch P.C.B.	1
S6	4 2319 74130	Slide Switch (Record/Play)	1
	141 0 3119 18400	Radio Chassis Assy	1
VR1	141 0 3619 00900	Volume Assy	1
	141 0 8219 04000	Pointer Assy	1
	141 2 1439 09900	Sign Plate	1
	141 2 1559 03000	Rewind Button Trim	1
	141 2 1559 03100	F.F. Button Trim	1
	141 2 1559 03200	Stop Button Trim	1
	141 2 1559 03300	Play Button Trim	1
	141 2 1559 03400	Record Button Trim	1
	141 2 1619 67800	Select Rewind Button	1
	141 2 1619 67900	Select F.F. Button	1
	141 2 1619 68000	Select Stop Button	1
	141 2 1619 68100	Select Play Button	1
	141 2 1619 68200	Select Record Button	1
	141 2 1629 04200	Switch Lever	2
	141 2 1629 04300	Switch Lever	2
	141 2 2419 23500	Sheet Lever	3
	141 2 2419 23501	Sheet Lever	1
	141 2 2419 23900	Record Button Veil	1
	141 2 2419 24000	Play Button Veil	1
	141 2 2419 24100	Stop Button Veil	1
	141 2 2419 24200	F.F. Button Veil	2
	141 2 2719 13500	Handle Bracket	1
	141 2 2719 14000	**Handle Shaft**	2
	141 2 3619 11300	Volume Shaft	1
	141 2 3659 15300	Switch Bracket	1
	141 2 3829 27100	Battery Terminal	1
	141 2 3829 28900	Spring, Terminal	1
	141 2 3829 29000	Spirng, Terminal	1
	141 2 3899 09600	Microphone Holder	1
	141 2 4219 10800	Screw	2
	141 2 4219 13300	Rivet	3
	141 2 4219 20700	Rivet	1
	141 2 4219 21800	Screw	2
	141 2 4359 25300	Insulator	1
	141 2 4459 25900	Cushion	1
	141 2 4459 26000	Cushion	2
	141 2 4539 06700	Washer	2
	141 2 4539 21200	Washer	1
	141 2 4569 07200	Shaft Bracket	1
	141 2 4569 07300	Washer	2
	141 2 4619 06600	Spacer	1
	141 2 4729 06000	Lug	1
	141 2 6239 00300	Click Plate	2
	141 2 7319 40500	Slider	1
	141 2 7319 40600	Slider	1
	141 2 7519 49600	Shaft Lever	2
	141 2 7529 90700	Pin	1
	141 2 8219 27600	Shaft Bracket	1
	141 2 8219 27700	Pointer Guide	1
	141 2 8259 07800	Roller	2
	141 2 8259 08100	Steel Ball	4
	141 2 8519 85900	Spring, Ball	4
	141 2 8519 91300	Spring	1

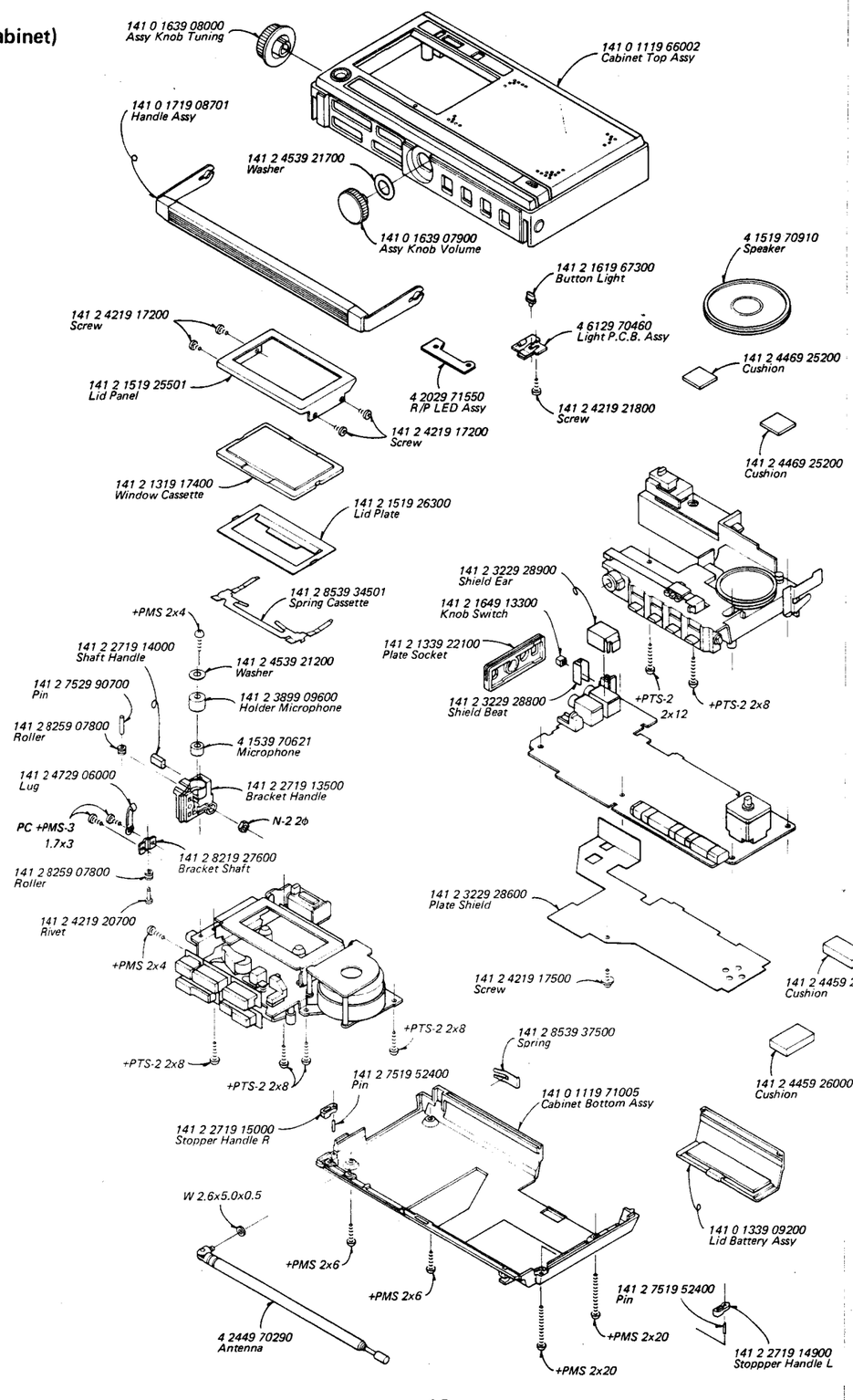
PARTS LIST (Continued)

Ref. No.	Part No.	Description		Q'ty
	MECHANISM			
	101 3 1302 00411	Screw, Pan Hd.	+M2.0x4	2
	103 3 1302 00811	Screw, Pan Hd. Tapping-2	+M2.0x8	9
	106 3 1202 00123	Nut-2	+M2.0	1
	112 3 1301 50082	E Ring	M1.5	4
	128 3 1317 02018	PC Screw, Pan Hd.-3	+M1.7x2.0	1
	128 3 1317 03018	PC Screw, Pan Hd.-3	+M1.7x3.0	4
	128 3 1317 06018	PC Screw, Pan Hd.-3	+M1.7x6.0	1

NOTES: 1. Parts order must contain Model Number, Part Number and Description.
2. Ordering quantity of screws and resistors must be multiple of 10 pcs.
3. CG = Chip Condenser, RG = Chip Resistor
PC Screw = Precision Instrument Screw

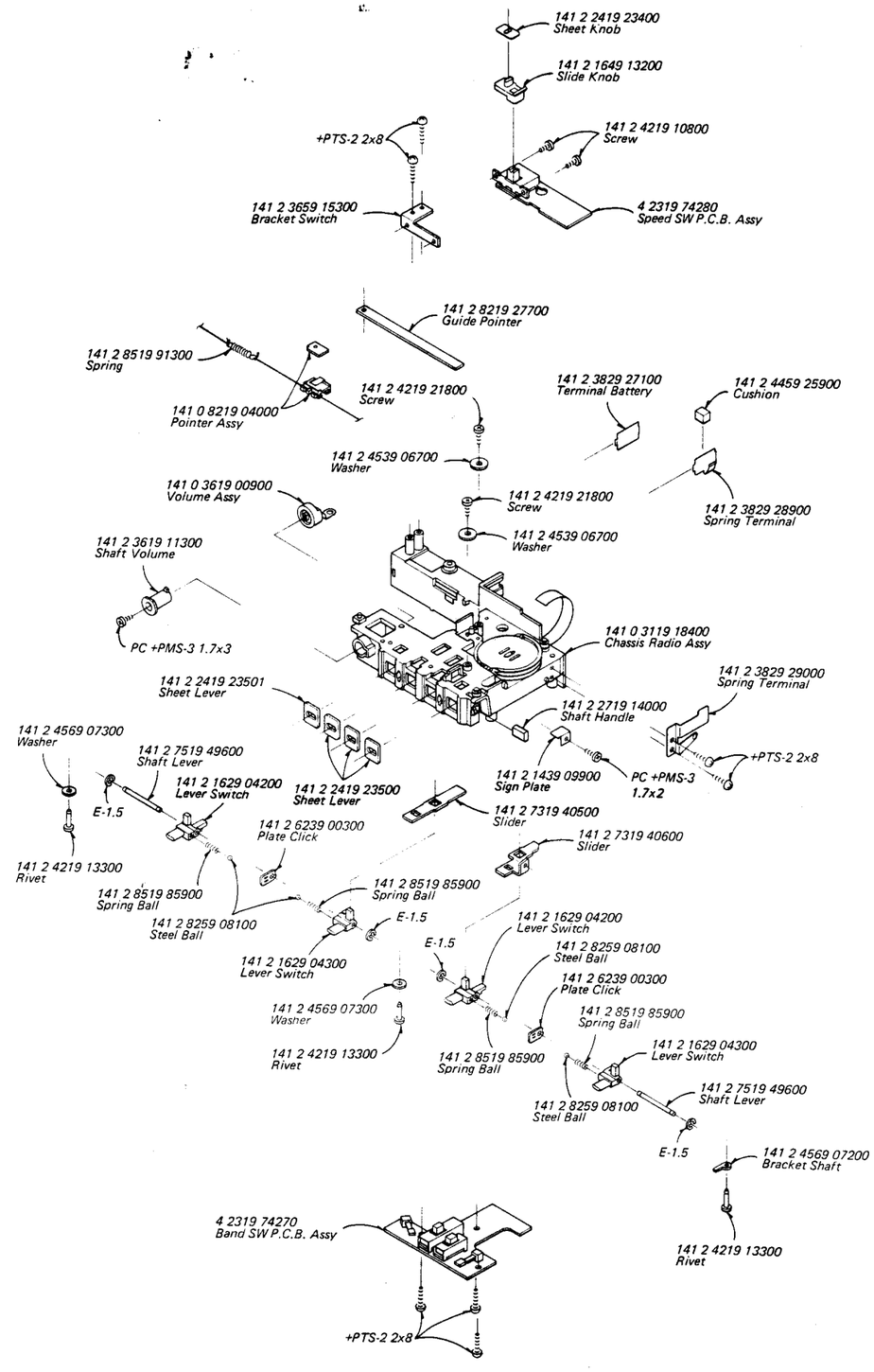
EXPLODED VIEW

(Cabinet)



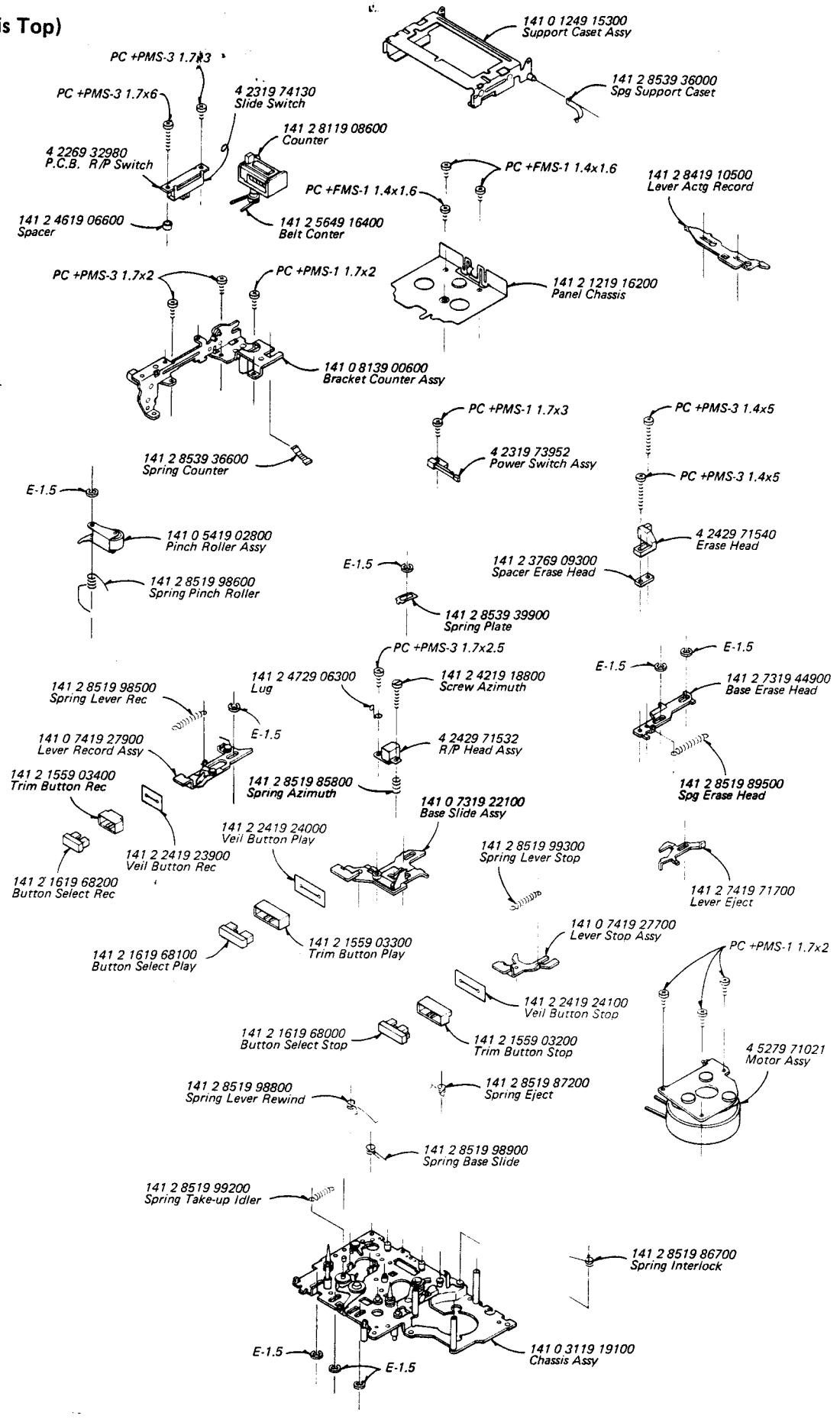
EXPLODED VIEW (Continued)

(Radio Chassis)



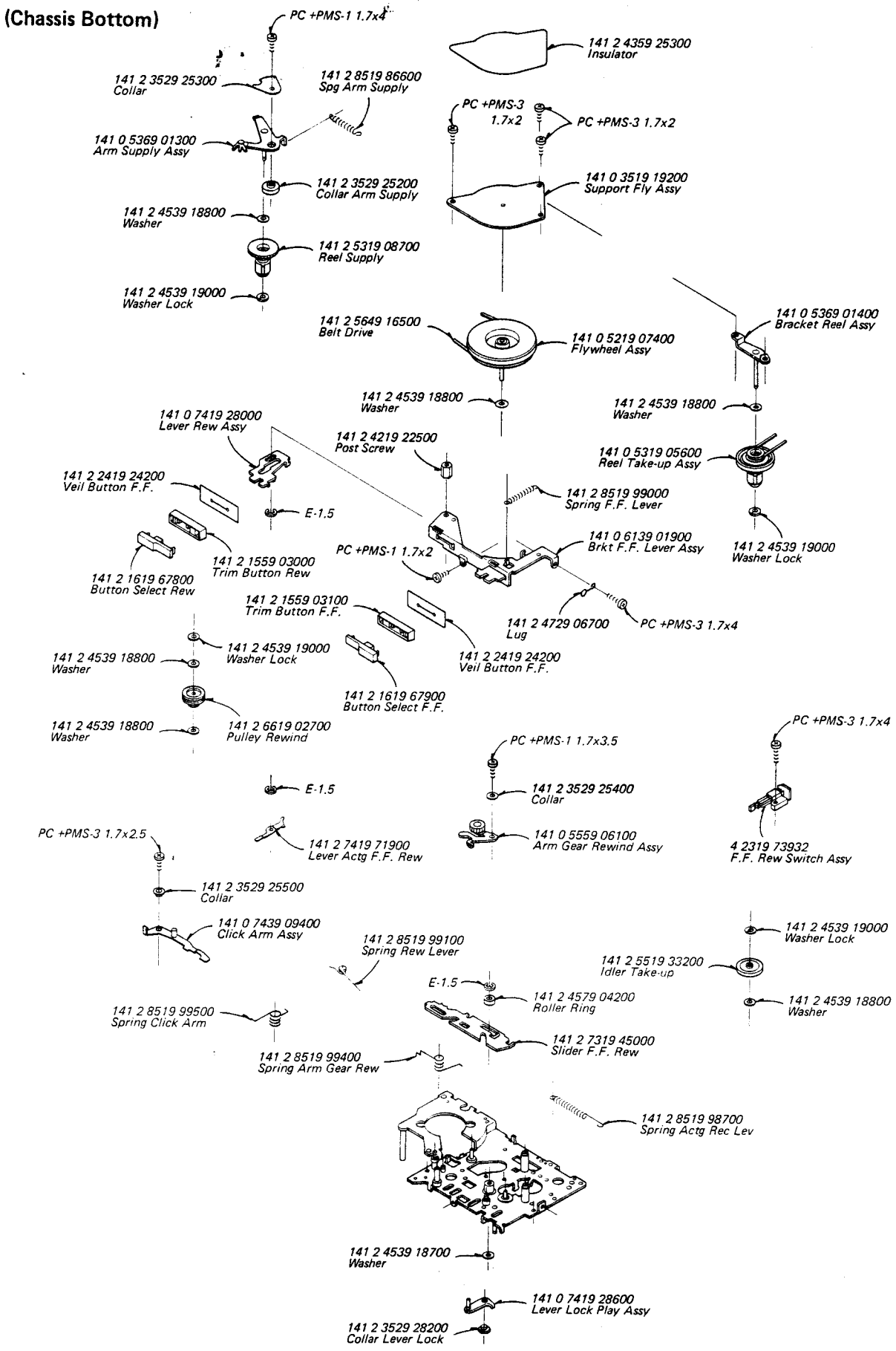
EXPLODED VIEW (Continued)

(Chassis Top)



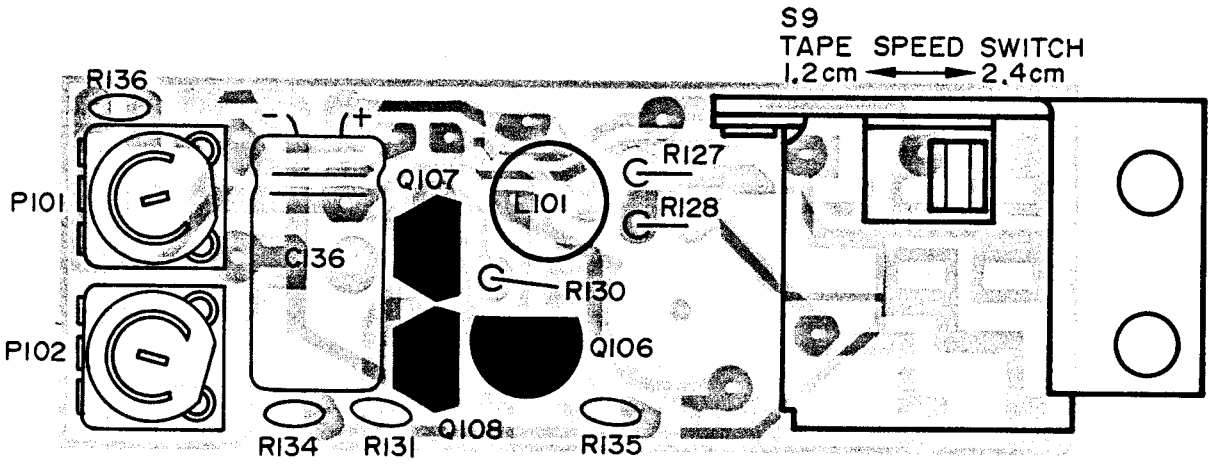
EXPLODED VIEW (Continued)

(Chassis Bottom)

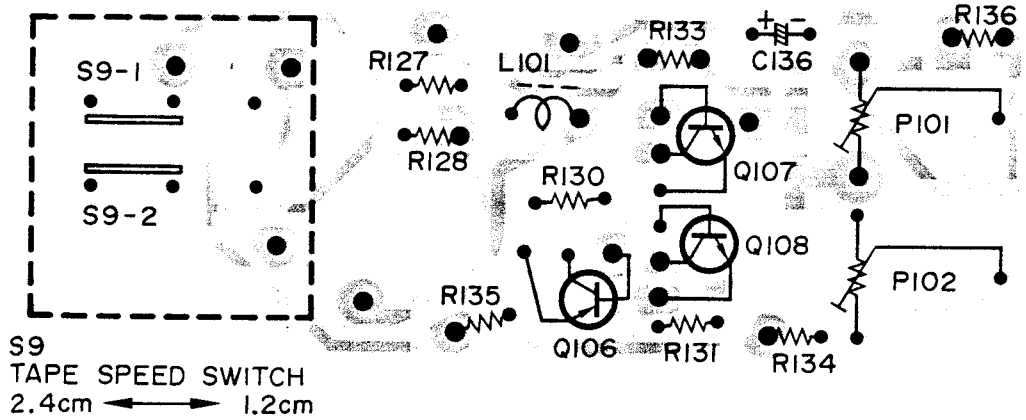


SPEED SWITCH P.C.BOARD

(Top View)

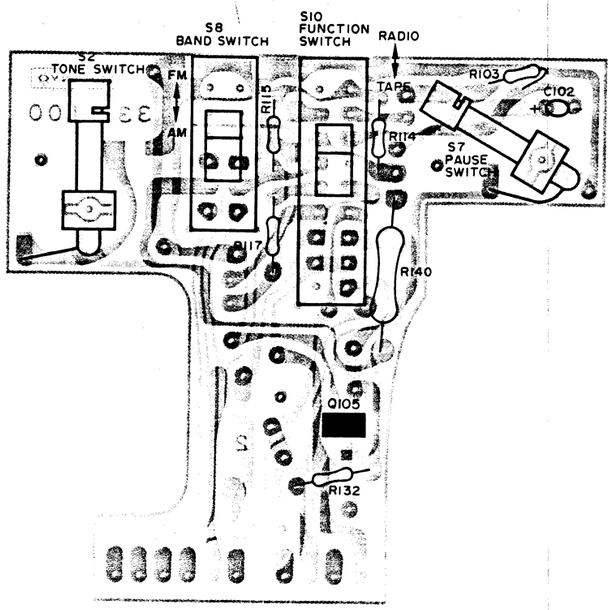


(Bottom View)

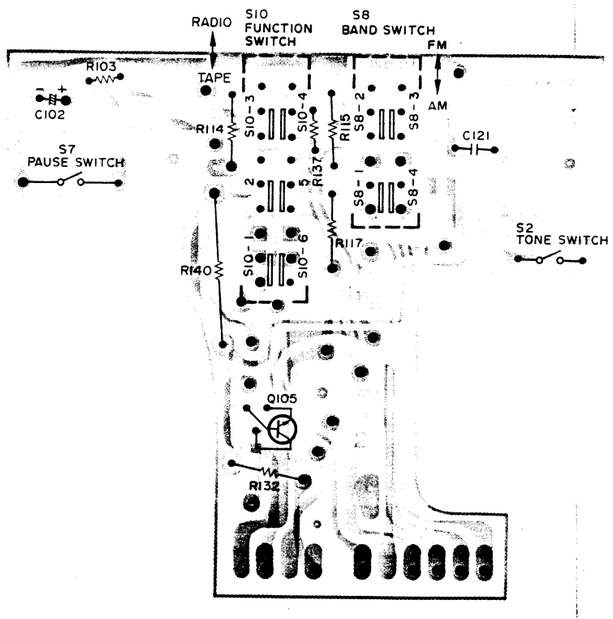


BAND SWITCH P.C.BOARD

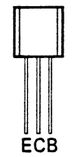
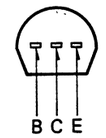
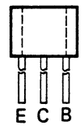
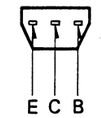
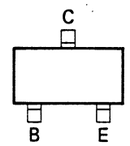
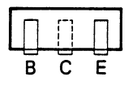
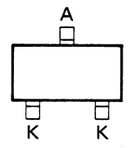
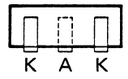
(Top View)



(Bottom View)



IC & TRANSISTOR LEAD IDENTIFICATION

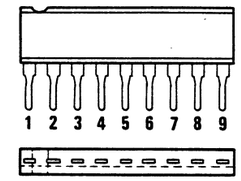
FRONT VIEW	BOTTOM VIEW	XSTR & DIO
		2SB698
		2SC536 2SC2785 2SC2786
		2SB709 2SD601
		MA151WA

TERMINAL NAMES

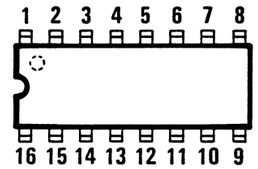
B ⇒ Base
C ⇒ Collector
E ⇒ Emitter

A ⇒ Anode
K ⇒ Cathode

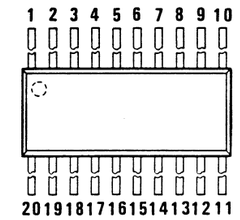
BA526 (Side View & Bottom View)



μPC1018 (Bottom View)

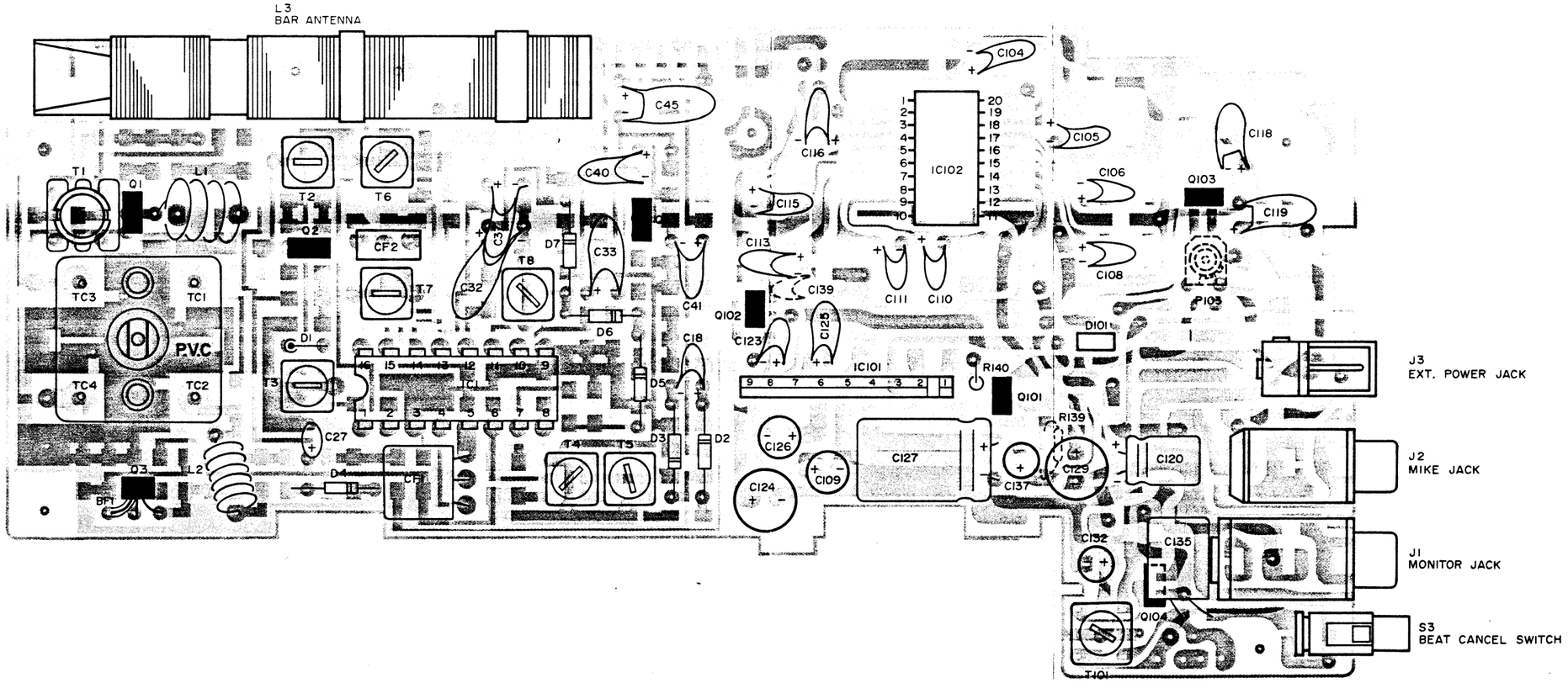


M51141P (Bottom View)

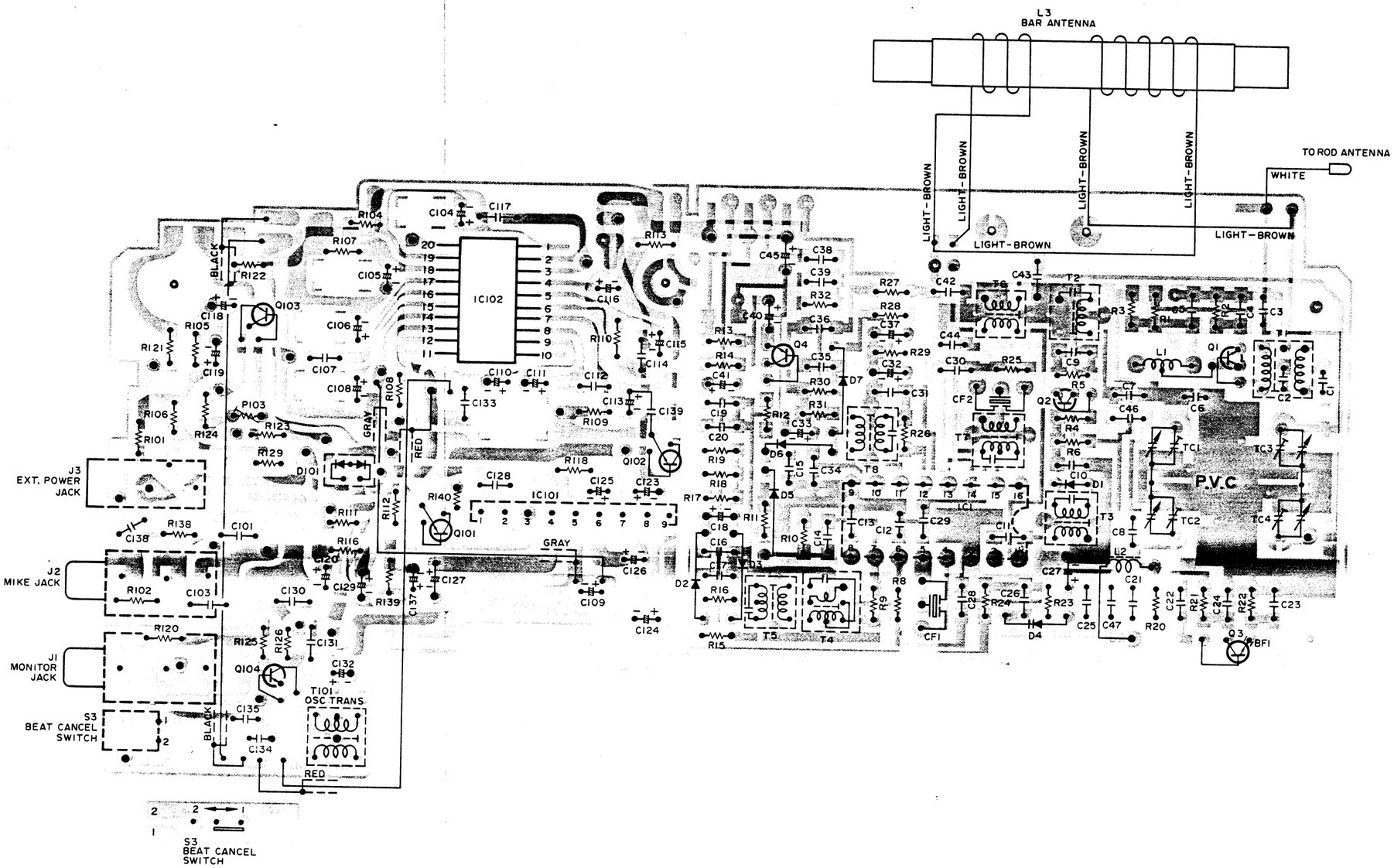


AMPLIFIER BASE P.C.BOARD(Top View)

MAHAM RADIO

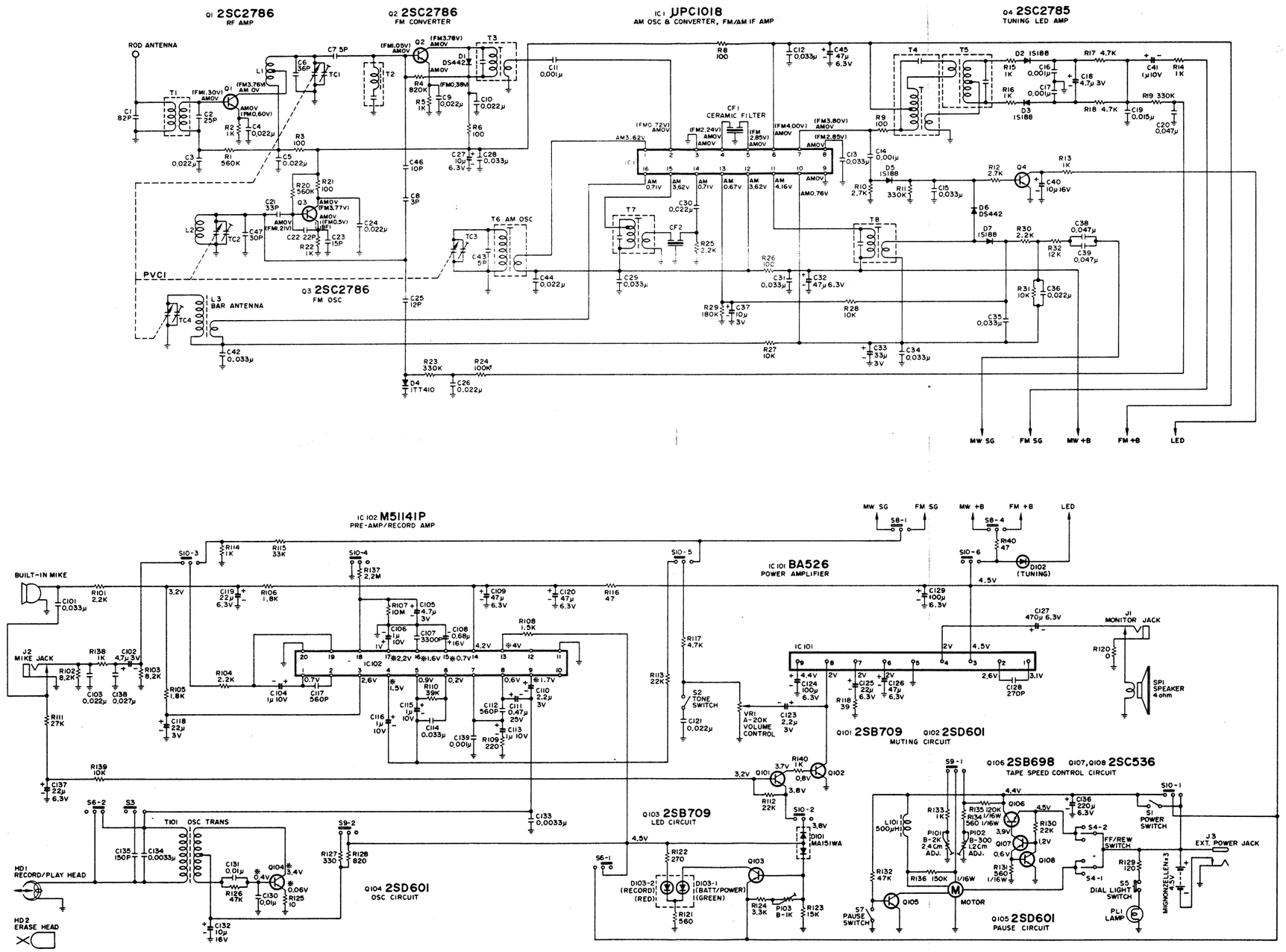


AMPLIFIER BASE P.C.BOARD(Bottom View)



SZALA MARIAN

SCHEMATIC DIAGRAM



NOTE:

- Voltages in Amplifier Section indicate the values measured with the voltmeter (Internal Resistance: more than 1MΩ/V) under no-signal condition in the playback mode.
- Voltages in Radio Tuner Section indicate the values measured with the voltmeter (Internal Resistance: more than 1MΩ/V) under no-signal condition.
  Voltages in parentheses indicate the values obtained at AM.

No.	Name	Position	No.	Name	Position
S1	POWER Switch	OFF	S6	RECORD/PLAY Switch	PLAY
S2	TONE Switch	LOW	S7	PAUSE Switch	PLAY
S3	BEAT CANCEL Switch	1	S8	BAND Switch	AM
S4	F.F./REW Switch	OFF	S9	TAPE SPEED Switch	2.4 cm
S5	DIAL LAMP Switch	OFF	S10	FUNCTION Switch	TAPE

WIRING DIAGRAM